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Gerhard Giebisch (1927–2020): A Leader in Kidney Physiology

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On April 6, 2020, Gerhard Giebisch passed away at the age of 93. He was one of the most eminent and influential kidney physiologists; his active career spanned more than six decades beginning in the mid-1950s, during which he established major insights into renal functions that have become textbook knowledge. He has been a mentor and father figure for many researchers working with the kidney and other epithelial organs. Most importantly, he developed a worldwide network of former coworkers, colleagues, and friends built on discussions, collaborations, mutual interests beyond science, respect, and friendship.

Gerhard Giebisch was born 1927 in Vienna and remained attached to his home city for all his life.[1,2] His parents sparked his love for languages, literature, and classical music. He attended medical school at the University of Vienna, where his interest in (renal) physiology and pharmacology was inspired by superb lecturers, by reading Homer Smith's work, and by spending some time as a medical intern at the University Hospital Zurich under the direction of Otto Spühler. After gaining his first research experience with Franz von Brücke at the Department of Pharmacology in Vienna, Gerhard moved to the United States in 1951 and started a clinical education at Milwaukee Hospital. After this short clinical interlude, he joined the Department of Physiology at Cornell University Medical School chaired by Robert Pitts. He trained in analytical methods and clearance experiments, studying mostly acid-base– and electrolyte transport–related questions. By learning and using micropuncture studies, he first started exploring the amphibian *Necturus* tubule. He soon further developed this method by combining it with electrophysiologic techniques, paving the way for his later seminal studies. Integrating the then recent ideas on distinct basolateral and apical ion transport systems pioneered by Hans Ussing, he was among the first to describe segment-specific driving forces and ion transport systems along the nephron. After a short return to Austria, he was appointed an assistant professor at the Department of Physiology at Cornell in 1956. Here, he met Erich Windhager and Gerhard Malnic, both of whom became lifelong colleagues and close friends. With them, Gerhard moved the micropuncture technique from amphibian to mammalian nephrons and refined technologies to measure ions in small nanoliter samples collected from these preparations. These refinements and advances allowed exploration of important basic mechanisms of coupling between sodium transport and water movement in proximal and distal nephron segments. In the early 1960s, Gerhard turned his attention to renal potassium handling, a topic that he would thoroughly investigate over the next four decades.[3] These studies from micropunctured and perfused nephron segments are the basis of our current textbook knowledge of renal K handling and its regulation.

In 1968, Gerhard Giebisch was offered the chair of the Department of Cellular and Molecular Physiology at Yale University and appointed as Sterling Professor of Physiology. In these functions, he attracted new members to the department and started lifelong collaborations with other researchers interested in kidney and epithelial physiology, among them Emile Boulpaep, Peter Aronson, Michel Kashgarian, Joe Hoffmann, John Geibel, Richard Lifton, and many others. The vibrating research environment focusing on epithelial transport processes was further supported by establishing a program project grant, bringing together many of the transport-interested researchers at Yale. The department became a mecca for researchers interested in (epithelial) transport biology. Over the years, Gerhard and his laboratory addressed many basic questions relating to tubular transport of NaCl, water, acid-base equivalents, and importantly, potassium and their regulation. In the era of cloning and molecular biology, Gerhard intensively collaborated with Steve Hebert who later led the Department of Physiology at Yale until his untimely death.

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Gerhard Giebisch published over 400 research articles. They are examples of clear argumentation, avoiding any statement not supported by data. He received numerous awards, including the Homer W. Smith award and the John P. Peters award of the American Society of Nephrology, the A.N. Richards award of the International Society of Nephrology, the Franz Volhard medal of the German Society of Nephrology, and several honorary doctorates, and he was elected to the National Academy of Science. He served as president of both the American Society of Nephrology and the Society of General Physiologists.

Gerhard's legacy goes far beyond his scientific achievements and the textbook *The Kidney* that he edited together with his close friend Don Seldin. He trained and inspired several generations of young physiologists and nephrologists from all corners of the world. Many of them advanced to become established researchers in physiology or nephrology and train new generations. Even many years after leaving his laboratory, he would still keep a vivid interest in them and their work and offer his advice.

His research philosophy was driven by curiosity and the deep interest in understanding the kidney. He once joked, "The kidney is the smartest organ, far more than the brain. It is able to adapt to various challenges. But do not tell this to the neurologists." In a review in 2011,[1] he reminded us always to integrate molecular insights with the function of organs and the whole organism. This question was central to his scientific reasoning and he would often bring it up during discussions.

Gerhard very much loved traveling. He was the center of a large international network of colleagues, former fellows, and friends. He spent much time in Europe, always keeping close ties to his home city Vienna where he also frequently lectured. During the summer, he would go to the Dolomites hiking and climbing with a small group of close friends. During the year, he exercised diligently to be ready for his mountains. In his office, he kept a large panoramic picture of "his Dolomites." His interests extended far beyond science, and he very much loved the fine arts, particularly literature, classical music, and opera. Gerhard was a good listener, and he always keen on learning the latest news in science and politics and commenting on them with a good sense of humor.

In 1952, he and his wife Ilse were married. After she passed away in 2008, he remembered her: "My late wife, Ilse, especially understood me and my somewhat relentless pursuit of research. It has been said, correctly I believe, that while I did research, she did everything else."[1] He is survived by his two children, Christina Giebisch and Robert Giebisch, and four grandchildren, Daniella and Marisa Mohrer and Allison and Daniel Giebisch.

DISCLOSURES

H. Murer and C. Wagner have written similar obituaries for Pflügers Arch. and NephroNews.

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